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FUJITSU

LOT 3 - Solutions Exc HPC

Case Study
Keele University

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I. INTRODUCTION

In reviewing our reference library and our business within the Education sector, we have selected our recent win at Keele University with ET Works as our reference case for Lot 3 Integrated Systems and Solutions. This project demonstrates the capability of our partner network and our strategy of partner first within the Education business.

We have structured our response to cover the areas that you need information upon to clearly demonstrate to you that we have the skills and capabilities to deliver against Lot 3 within the Framework.

In selecting partners to work with on the SSSNA Framework, Fujitsu ensure that their Design and Project Management methodologies are in line with ours, such that as an OEM we are assured that our partners can deliver to the same standards as if it was Fujitsu delivering the project.

Background and requirements

Keele University is building their latest Innovation Centre (IC7) (due to be completed 2022) and features a Data Visualisation Suite, office space and hi-tech meeting and collaboration space, with the aim to support a significant uptake in the use of advanced data analytics by SMEs based in Stoke-on-Trent and Staffordshire, leveraging the distinctive expertise in this area at Keele.

Keele University wanted to offer a secure tenant to their internal departments and to the small business who rent offices in the adjoining business park. This was to be hosted on a virtual environment from within a private cloud that Keele University IT team would manage. It needed to be highly available, easy to manage and integrated into Keele University's existing Veaam backup infrastructure.

As the local businesses potentially worked round the clock, Keele University needed the solution to be available and supported on a 24x7 basis.

Keele University issued a tender in June 2021, and Fujitsu worked with its partner ET Works to assess the requirements and determine a solution that would meet all the requirements and within the budget Keele University had set for this.

Having determined that a Hyper converged infrastructure would address the requirements, Fujitsu and ET Works worked with Nutanix to design a solution for Keele University.

The tender was awarded to Fujitsu and ET Works and the orders have been received. The work will commence in January 2022, with delivery complete by February 2022, in readiness for the IC7 opening in April 2022.

II. PROJECT DATA SYNOPSIS

1. ENTITIES INVOLVED AND RESPECTIVE ROLES IN THE PROJECT

This project was conducted by the partnership of Fujitsu Services Limited and its partner ET Works (Prime contractor).

For a more detailed description of the role distribution between each of the parties in the project, please refer to the Section III further on.

2. PROJECT NAME AND GEOGRAPHICAL LOCATION

The Project IC7 New Build Datacentre project for Research & Medical Sciences was contracted with the Keele University for the delivery of infrastructure and services in Keele, Staffordshire.

3. PROJECT TIMEFRAME

The project started in November 2021 and the estimated completion date is February 2022.

III. DESCRIPTION OF THE SOLUTION PROVIDED, TECHNOLOGY DEPLOYED AND WARRANTY TERMS

The Solution and technology selected

The technology selected to meet Keele University's requirements was two 3-node PRIMEFLEX for Nutanix Enterprise Cloud hypervisor clusters that form a resilient pair in an active/standby configuration. PRIMEFLEX for Nutanix is a multi-cloud, multi-hypervisor platform that includes all the hardware and software to simplify procurement and deployment by using hyper-converged building blocks. Each node consisted of a XF3070-M2 server with Intel Xeon Silver 4210R 10 Core processors with 512GB of memory and 14.4TB of storage. Keele University IT team were already familiar with the Fujitsu PRIMERGY range of servers as they had bought these for their data centres in the past 3 years.

It leverages high performance, energy-efficient FUJITSU PRIMERGY standard x86 servers and the software-defined compute, virtualization and storage technology in the Nutanix Acropolis cloud OS, Prism management and Flow. Built-in resiliency handles drive, server, or component failures – delivering the continuous availability Keele University wanted for its environment. If the hardware fails, it can be just swapped out and the software heals itself, with no complicated management steps.

The software stack comprised of

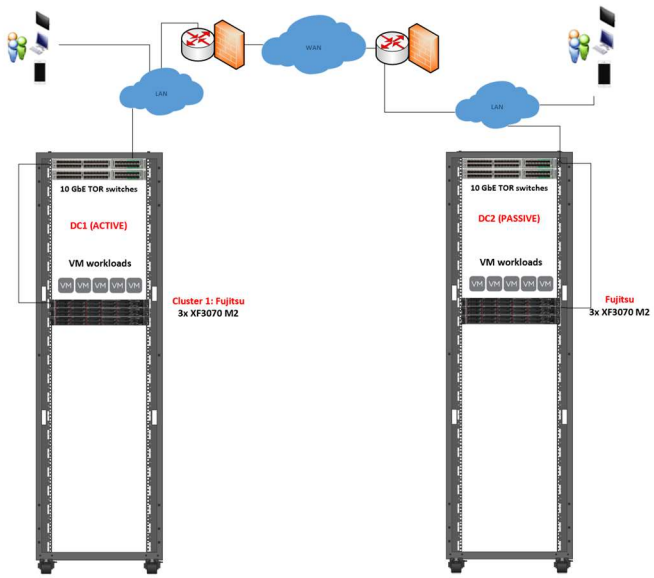
Nutanix Acropolis (AOS) is the operating system for the Nutanix hyper-converged infrastructure platform. It contains a number of data services and features for data protection, space efficiency, scalability, automated data tiering and security. Acropolis comes with its own built-in hypervisor called AHV.

Nutanix Prism Pro which improves the quality and efficiency in IT operations for the modern data centre. Powered by the machine learning and task automation, Prism Pro intelligently optimizes capacity, proactively detects performance anomalies, and will enable Keele University's IT team to automate operations tasks with ease and confidence. It provides continuous built-in monitoring and alerting, and APIs make it easy to collect rich, cluster wide performance and capacity metrics.

Nutanix Flow delivers advanced network security, providing visibility into the virtual network, application-centric protection from network threats, malware, and ransomware and security and compliance monitoring.

We also supplied the Veeam Availability Suite Enterprise Basic licences such that Nutanix solution could be integrated into Keele University's existing Veeam backup solution.

The solution is depicted below:



The solution was supplied with support for 24x7, 4-hour onsite response for the server hardware and a 24x7, 4-hour remote response for the hypervisor software for 5 years.

Fujitsu can extend both the term (up to maximum of 5 years) or uplift the Service Level as required (for example to '4hour Response').

When considering requests for extended warranty Fujitsu considers:

- The End of Support Life (EOSL) date, which is 5 years from the last sale i.e., End of Sales (EOS) date. Fujitsu can offer support up to the End of Support Life date and this is a standard process. When support is required beyond the EOSL date, Fujitsu has to consider the availability of spares, as when systems are no longer manufactured the availability of spares reduces as they are not replaced. If a customer is planning a tech refresh of the equipment, and requires Fujitsu to support the equipment being replaced, this will influence the decision to offer extended support. If the customer gives Fujitsu sufficient advanced warning of needing extended support beyond the EOSL date, Fujitsu can investigate whether it can do a 'last time buy' of spares for the particular configuration and ring fence it for the customer use only (at additional cost).
- Uplift to on-onsite response and improved time to fix depend mainly on location, in relation to where spares are located and the availability of suitably qualified engineers.

Design and Deployment Approach

Fujitsu chose to work with ET Works for this opportunity, due to their expertise in Nutanix projects which was the technology fit for Keele University.

For the tender response Fujitsu worked with ET Works and Nutanix to assess the requirements provided and through the Clarification Questions process we were able to clarify areas of doubt and provided an outline of the High-Level Design and the capacity of the clusters in order to size and price the solution for the tender. An outline of how the delivery project would be managed, using PRINCE2 project management methodology was also submitted.

As we move to deliver the project, the following will be managed by ET Works and Fujitsu to ensure the design, testing and handover of the solution to Keele University will be achieved to time and budget.

We will cover the following in greater detail as requested by you:

1. Project management
2. Design Method
3. Risk Management
4. Customer liaison
5. Cost management

1. PROJECT MANAGEMENT

Fujitsu's standard methodologies are based upon industry best practice guidelines. These in combination with our own extensive experience form the basis of our Manage Project, Manage Programme and Manage Risk processes. Together these form constituent elements of our overall ISO9001:2008 assured Business Management System (BMS).

The 'Manage Project' processes are defined for use by all Fujitsu projects, irrespective of project size and nature of deliverables, and incorporate a comprehensive set of PM tools including detailed procedures, templates, and tools.

Project Management for this project was provided by ET Works utilising resources from Fujitsu, as necessary and working with the Keele University's Implementation Team.

Working with Keele University the project manager will:

- Provide the project initiation document (PID) and keep it up to date throughout the project lifecycle

- Provide the project plan and keep it up to date throughout the project lifecycle
- Liaise with all project stakeholders to ensure the smooth running of the project
- Control the project stages, providing highlight reports, updated project plans and escalating issues and risks as necessary
- Manage the process of user acceptance, handover to Keele University and project closure.

Project Team Structure & Roles

A definitive list of all project stakeholders will be created at the start of the project and will include the name of each stakeholder and respective project team role. The following provides an example of the stakeholder roles and responsibility. There can be more than one person assigned to certain roles, but a representative who is ultimately accountable must be supplied.

Members of the Project Board will be:

- Fujitsu as the OEM Supplier responsible for liaising with Keele University, and the project team to assist in the project direction
- Project Sponsor from Keele University, responsible for the sign off on project budget and deliverables
- Senior User from Keele University to deliver the UAT and provide feedback to the project team on the usability of the solution throughout the project phases

Members of the Project team will be:

- Project Manager from Keele University who will liaise with ET Works project manager and project team to ensure that project deliverables are supplied according to the agreed plan
- Project Manager from ET Works who will liaise all members of the project team to ensure efficient and timely completion of the project. Report to the project board. Provide technical support as required
- Project Support from ET Works providing logistical and project support as necessary
- Design Authority who will document the design of the solution and produce the HLD, LLD and configuration guides
- Subject Matter Expert (SME) from Nutanix who will provide advice and input to the design team.

Stage Management

The project will be divided into manageable stages. At the end of each stage, a stage report will be presented to the project board for review, as well as an update to the project plan for the next stage. It is possible for work to overlap stages, but each project stage must have sign-off from a designated representative from the project board.

Minor, non-disruptive problems and issues within agreed tolerances of time, quality and budget can be resolved by the project manager and team members, but all major (out of tolerance) problems, risks and issues will be escalated to the project board in order for the project board to review and give direction. Any such exceptions or observations will be recorded in the stage reports.

Quality Management

ET Works will work with Keele University to identify the acceptance criteria for a successful project completion, and these are identified in the Acceptance Criteria table in the PID. Acceptance criteria will be tested during the user acceptance test (UAT) tasks in the project plan. ET Works will work with Keele University to resolve any problems that are/have been identified during the UAT to ensure that the acceptance criteria are met.

At least one ET Works and one Keele University member of the project team must be present during UAT. Either party can identify a second or proxy team member to carry out the testing to satisfy project resourcing and ensure the smooth progression of the project.

2. DESIGN METHOD

As we move into delivering the solution, the solution architect will validate all the assumptions made during the tender submission, confirm that the requirements are unchanged and complete the overview architectural reference for the solution elements and how they will be deployed at a data centre level.

The Solution architect will follow the design method stages as follows:

- The design stage which covers preparation for implementation, operational running, and testing
- The develop stage to build the defined solution in a controlled environmental and the development of any associated implementation guides.
- The deliver stage where the solution is implemented and tested. This will be a joint activity with staff from Keele University who will be responsible for the ongoing support and operation of the solution. This ensures that validation of the solution is satisfactory and will allow for knowledge transfer of the solution.

Verification and validation are ongoing activities through the 'design and develop' and into the 'deliver' stages of the overall project of the designed Solution. Verification ensures that the final solution 'can be built right' whilst validation ensures that 'the right solution is built' and meets the Keele University's requirements. The output is captured in a User Acceptance Test (UAT) document that documents the testing that was agreed and the outcome of the tests.

The deliverables from the Design method are:

- The High-Level Design (HLD) document that details all the Functional and non-functional requirements and how they are to be addressed, the design decisions made, and any Risks, Assumption, Issues and Dependencies that exist, which will be worked through as the project progresses. The HLD will be agreed and signed off by Keele University before proceeding to a Low-Level Design
- The Low-Level Design details the configuration of the solution and information needed to implement the solution
- Operational handover training for administrative staff. This typically occurs inline through the deployment in a hands-on fashion. It is not a substitute for a formal training programme.

3. RISK MANAGEMENT

The Fujitsu Manage Risk Process, which is mandatory throughout the lifecycle from the bid stage until closure of the contract, defines the steps (Initiate, Identify, Analyse, Plan and Manage) that every bid or contract is to progress through to ensure the appropriate management of risk. It is mandatory that a Risk Plan is produced and updated throughout the life of the project or service.

The risk plan for this project started during the tender stage where the bid team would have identified and classified risk in Technical, Legal and Commercial and Finance aspects of the proposal. These were captured as follows:

- Clarity of objectives (i.e., understanding what is at risk)
- Understanding of the environment in which the project or service will take place
- Prioritisation of risks
- Identifying and carrying out appropriate containment

- Planning and timely invocation of fallback
- Appropriate Escalation.

The Risk Plan now moves from the bid stage through to the delivery project, and the risks (as well as the assumptions, issues, and dependencies) are review and determined what action was needed or what information became available to de-scope the risk or to manage the risk such that the project and solution are not compromised.

Those risks that remain as project risks and will now be assessed continually throughout the project by the PM who will work with Keele University to identify potential risks that could put the project off track, and these will be captured in a risk register, and updated throughout the project. Each risk is rated and any that are deemed as a high rating will be escalated to the project board to obtain a recommendation for the project team as to how this risk should be managed.

Issue Management

Project-affecting issues can be raised by any member of the project team to the PM at any time during the project and these will be captured in a risk register and updated throughout the project by the PM. There will be tolerances set against any issue.

Within agreed tolerances, the PM will work with the project team to resolve the issue. Should the issue weighting be deemed as high or out of tolerance, it will be escalated to the project board to assist in determining a resolution.

Change Management

When issues and risks that require escalation to the project board are identified, these will be formally sent by the project manager in writing (by email). The change request should include:

- The essential information to quantify the issue or risk to the board, which at a minimum is an extract of the pertinent info from the issue or risk register
- A brief description of the overall issue/risk and its potential impact
- A recommendation or potential resolution to the issue/risk

The project board will then assess and respond to this via the PM and authorise a change and/or an exception plan for the current or next stage of the project. The PM will in turn work with the project team to resolve the issue/mitigate the risk as per the authorised change.

4. CLIENT LIAISON

ET Works and Keele University will define and agree the formal communication strategy at the project kick-off meeting. This will determine the appropriate level of communication and documentation relative to the size and complexity of the project.

Throughout the project lifecycle various forms of communication will be used and it is important that the PM is kept in the loop on such communications including but not limited to:

- Verbal discussions - Will take place as the project progresses, primarily on a one-to-one basis between project resources and outside of formal meetings. If any formal decisions are made in one-to-one discussions the project manager must be informed in writing (Email)
- Email – This would be the preferred choice of communication throughout the day-to-day communication on the project. Any important information should be recorded on email to the PM for future reference and to allow the whole project team to be up to speed at all times.

- Stage Meetings – Throughout the project formal meetings may be called to discuss issues, risks and changes that are outside of the agreed tolerances. For all such meetings, minutes and actions will be circulated by the PM to all team members and also added to the project documentation.
- Reports – Each stage of the project will be reviewed and the necessary information, including the updated project plan and any relevant issues or risks or change requests, will be communicated to all parties via an end of stage report, which could take the form of an update email for smaller projects or a more formal report for more complex projects.
- The project manager will ensure all decisions are recorded in the relevant documentation and provide feedback to the project team when necessary.

5. COST MANAGEMENT

The Project Manager (PM) is responsible for managing the cost for the project and is accountable to the Project Board for this. The PM will flag any significant deviation of the project in terms of costs or time, and will seek guidance and approval from the Board before undertaking the changes.

An agreed margin of change to the project cost base will be agreed at the start of the project with the Project Board to allow the PM to resolve issues and keep the project on track. If during delivery the project team identify risks or issues that mean the cost of the project will move outside the boundaries of the agreed margin, the PM will escalate to the project board to assist in determining a resolution. This means that all parties are informed and consulted of any significant changes to costs.

Fujitsu together with ET Works have an accumulation of experience and know-how to draw upon. Fujitsu and ET Works work on the principle of continuous improvement (Plan, Do, Act). We also have a lessons learnt process that means we review what went well, what could have gone better and what would we do next time, meaning we are continually seeking ways to improve the way we deliver solutions and project to our customers.